

Collections of Gastropods from the Cascade Mountains of Washington

BY

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INTRODUCTION

No COMPREHENSIVE SURVEYS of the Cascade Mountain molluscan fauna have been published since the work of HENDERSON (1929, 1936), and the collections upon which those papers were based were extremely spotty. This is easy to understand when it is realized that most of those mountain fastnesses were not penetrated by highways until after the end of World War II. The Cascades continue to pose problems of great difficulty with regard to collecting, involving long hours of hiking and the climbing of tall mountains.

This paper, then, is a continuation of the work started several years ago (BRANSON, 1969, 1972, 1975 A and B, 1977, and BRANSON, SISK & MCCOY, 1966) in an attempt to understand the distribution of mollusks in the Coastal and Cascade ranges.

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COLLECTING SITES

During May through mid-July, 1973, 84 collecting sites, distributed through the Cascade Mountains from British Columbia to the Columbia River gorge on the border of Washington, were visited. Not all of those sites were productive of mollusks, although they, too, are listed, for negative results are sometimes of interest. In the discussion, species are referred to the site of collection by the station numbers below.

1. Off Transcanadian Highway One, 14.4 km north of Hope, British Columbia; bracken ferns, maples, birches, aspen; 26 May 1973.
2. Near entrance, Manning Provincial Park, British Columbia; western red cedar, douglas fir, pines; 26 May 1973.
3. Hillside, 69.2 km into Manning Provincial Park, main road, British Columbia; douglas fir, pines; 26 May 1973.
4. Goldstream Provincial Park, Vancouver Island, British Columbia; big leaf maple, western red cedar, decaying logs; 29 May 1973.
5. Rockport State Park, 4.8 km east of Rockport, Washington State Route 20; douglas fir, western red cedar, vine and big leaf maple, ferns; nearly pristine; 31 May 1973.
6. Cowheaven Meadows Trail, 2.5 km above Marblemount Station, North Cascades National Park; douglas fir, hemlock, maples, evidence of an old fire; 1 June 1973.
7. Ross Lake National Recreation Area, 3.2 km southwest of Thornton Creek mouth on the Skagit River; douglas fir, maples, human disturbance; 1 June 1973.
8. Goodall Camp, Washington Route 20, Ross Lake National Recreation Area; 1 June 1973.
9. Immediately above Diablo Dam, Ross Lake National Recreation Area; red cedar, douglas fir, maples, forest duff, evidence of the 1922 fire; 2 June 1973.

10. Approximately 65 km west of Winthrop, near Swamp Creek off Washington Route 20, at approximately 1 200 m elevation; mostly silver fir; 2 June 1973.
11. Lone Fir Camp, Washington Route 20, 1 130 m elevation; mostly spruces; 2 June 1973; no specimens found.
12. Dry hillsides, 12.9 km northwest of Winthrop; cottonwood, creosote bushes in lowlands near Methow River; 2 June 1973.
13. Dry lowlands at Andrews Creek crossing, Forestry Road 392, 37 km north of Winthrop; douglas fir, ponderosa pine; some spruce; 3 June 1973.
14. Dry, rocky hillside, Forestry Road 392, 13 km north of Winthrop; few spruces and pines, shrubs and tall grasses; 3 June 1973.
15. Poplar Flat Campground, 31 km west of Twisp, Forestry Road 349, 885 m elevation; pine and spruce, very dry; 3 June 1973.
16. War Creek Camp, Forestry Road 349; very dry; 3 June 1979; no specimens taken.
17. Dry hillside, Okanogan National Forest, 1 040 m elevation, 24 km east of Twisp; 3 June 1973.
18. Foggy Dew Camp, 32 km southwest of Twisp, Gold Creek Road 3109, 518 m elevation; spruce, ponderosa pine, very dry; 4 June 1973.
19. Alta Lake State Park, 3.2 km southwest of Paterog; ponderosa pine, very dry talus; 4 June 1973.
20. Lake Chelan State Park, 10.6 km up Lake Chelan Road (P.O. Route 1); ponderosa pine and very dry rocks; 4 June 1973.
21. Blewett Camp, Wenatchee National Forest, 16.1 km south of Leavenworth, U.S. Highway 97, 709 m elevation, moist meadows; 5 June 1973.
22. Swauk Pass, Wenatchee National Forest, U.S. Highway 97, 1251 m elevation; moist meadows; 5 June 1973.
23. Steep, rocky slopes, 3.5 km northwest of Leavenworth, Wenatchee National Forest along Wenatchee River, State Route 2; small hardwoods, sandy soil; 6 June 1973.
24. Glacier View Camp, Wenatchee State Park, State Route 2; hardwoods; 6 June 1973.
25. Deception Falls, Washington Route 2; silver fir, red cedar, moss, ferns; 6 June 1973.
26. Lewis Creek crossing, County Route 15, Snoqualmie National Forest, 4.2 km north of Index, Washington; torrential rain, maples, cottonwood, ferns, spruce, moss; 6 June 1973.
27. San Juan Camp, 3.4 km below Garland Mineral Springs, County Highway 15; red cedar, douglas fir, spruce, maples; 7 June 1973.
28. Henle Creek Camp, 4.8 km east of Verlot, Mount Baker National Forest; 7 June 1973.
29. Rocky slopes, Mount Baker National Forest, 5.2 km southeast of Big Four Camp; 7 June 1973.
30. Bedal Camp, 28.8 km southeast of Darrington, along Sauk River; torrential rain, maples, fir, red cedar, moss; 8 June 1973.
31. White Chuck Camp, Mount Baker National Forest, 22.6 km southwest of Darrington, along White Chuck River; torrential rain; 8 June 1973.
32. Low hillside, 3.5 km south of Darrington, Mount Baker National Forest, torrential rain; 8 June 1973.
33. Larabee State Park, 7.25 km south of Bellingham; sea level, fir, spruce, red cedar, ferns; 9 June 1973.
34. Heavily vegetated banks of Lookout Creek (second falls), Forestry Road 3904, Mount Baker National Forest, on Mount Baker, 762 m elevation; 11 June 1973.
35. Mount Baker View Point, Forestry Road 3904, near timberline, Mount Baker National Forest, 1 372 m elevation; 11 June 1973.
36. Mount Baker Trail head, Forestry Road 3904, 1 128 m elevation, firs; 11 June 1973.
37. Silver Fir Camp, Mount Baker National Forest, 610 m elevation; 11 June 1973.
38. Silver fir forest, 2.3 km above Silver Fir Camp, Mount Baker National Forest, State Route 542, 762 m elevation; 12 June 1973. No specimens taken.
39. Douglas Fir Camp, Mount Baker National Forest, near Glacier; douglas fir, red cedar, ferns, moss; 12 June 1973.
40. Horseshoe Cove, Lake Baker, Mount Baker National Forest, douglas fir; red cedar; 13 June 1973.
41. Rainbow Falls, above Lake Baker, Mount Baker National Forest; 13 June 1973. No specimens taken.
42. Park Creek Camp area above Lake Baker, Mount Baker National Forest; 13 June 1973. No specimens taken.
43. Boulder Creek Camp, Lake Baker, Mount Baker National Forest, 322 m elevation; 13 June 1973.
44. Clear cut, Schrieber's Meadows, near Lake Baker, Mount Baker National Forest, 1 067 m elevation; 13 June 1973.
45. Hillside, 3.4 km above Schrieber's Meadows, lava bed; 13 June 1973.
46. Lake Cascade, Orcas Island, Washington; 15 June 1973.
47. Birch Bay State Park; 17 June 1973.
48. Hillside, 4.8 km west of Snoqualmie Pass, U.S. Highway 90, Snoqualmie National Forest, 732 m elevation; 23 June 1973.
49. Snoqualmie Pass, U.S. Highway 90, Snoqualmie National Forest, 915 m elevation; silver fir and red alder; 23 June 1973.
50. East side of Lake Cle Elum at end of Forestry Road 903, north of Cle Elum, Wenatchee National Forest; 23 June 1973.
51. Sawmill Camp, State Route 410, Wenatchee National Forest, 773 m elevation; 24 June 1973.
52. Pleasant Valley Camp, State Route 410, Wenatchee National Forest, 1 021 m elevation; 24 June 1973. No specimens taken.
53. At mile 72 on Route 40, Wenatchee National Forest, 1 219 m elevation; 24 June 1973. No specimens taken.
54. Tipsoo Lake, just west of Chinook Pass, Mount Rainier National Park; scattered trees, ice, snow; 24 June 1973.
55. Sunrise Junction, State Route 410; 24 June 1973. No specimens collected.
56. Dalles Campground, just off State Route 410, Snoqualmie National Forest, 660 m elevation; 24 June 1973.
57. At Sunrise, along Emmons Glacier Nature Trail, in phlox, subalpine fir, whitebark pine, spruce, Mount Rainier National Park, 1 951 m elevation; 24 June 1973.
58. Red alder litter, 2.6 km up Glacier Basin Trail above White River Campground, Mount Rainier National Park, 1 525 m elevation; 30 June 1973.
59. At junction of Mather Memorial Parkway and White River Entrance, Mount Rainier National Park, 1 058 m elevation; 1 July 1973.
60. Deer Creek crossing, Route 123, Mount Rainier National Park, 1 095 m elevation; 1 July 1973.

61. At Silver Falls, Ohanopecosh River, Route 123, Mount Rainier National Park, 671 m elevation; 1 July 1973.
62. At the Grove of Patriarchs, 1 000-year old forest, douglas fir, western hemlock, red cedar, near Stevens Canyon Entrance, Mount Rainier National Park, 663 m elevation; 1 July 1973.
63. Box Canyon of the Cowlitz River, Mount Rainier National Park, 915 m elevation; 2 July 1973.
64. At Reflection Lakes, Mount Rainier National Park; 2 July 1973. No specimens collected.
65. Dense subalpine forest, 2 km west of Paradise, Route 706, Mount Rainier National Park; 3 July 1973.
66. Sunshine Point Campground, near Nisqually Entrance, rocks, red alder, Mount Rainier National Park, 640 m elevation; 3 July 1973.
67. Near Tahoma Creek, 5.2 km above junction of Route 706 on Westside Road, Mount Rainier National Park, 915 m elevation; 4 July 1973.
68. At end of Westside Road, North Puyallup River below hanging glacier, Mount Rainier National Park, 1 130 m elevation; 4 July 1973.
69. Koutz Mud Flow, Koutz Creek, near Longmire, Mount Rainier National Park, pioneer forest; 5 July 1973.
70. Strawberry patch, Anacortes, Washington, near sea level; 6 July 1973.
71. Timberline Road, Mount St. Helens, Gifford Pinchot National Forest, 1 281 m elevation; 7 July 1973.
72. Slopes of Mount St. Helens, 3.6 km above Spirit Lake, Gifford Pinchot National Forest, 1 098 m elevation; 7 July 1973.
73. Ape Cave, Gifford Pinchot National Forest; 8 July 1973.
74. Miller Creek crossing, Forestry Road N 90, Gifford Pinchot National Forest, maples, douglas fir, red cedar, hemlock, alder, litter, decaying wood; 9 July 1973.
75. Paradise Creek Campground, Forestry Road N 73, Gifford Pinchot National Forest, 27.4 km north of Carson, 457 m elevation; 9 July 1973.
76. Dry hillside, 0.8 km west of Wind River mouth on Columbia River, Route 14, white oak, maples, douglas fir; 9 July 1973.
77. Bird Creek Meadows, Mount Adams, Gifford Pinchot National Forest and Yakima Indian Reservation; 9 July 1973. No specimens collected.
78. Junction of forest roads N 888 and N 85, Gifford Pinchot National Forest, cottonwood, hemlock, douglas fir, alder; 10 July 1973.
79. Twin Falls Creek crossing, Forestry Road N 84, western edge of Mount Adams Wilderness, Gifford Pinchot National Forest; 10 July 1973.
80. Blue Lake Creek Camp, Forest Road N 123, Gifford Pinchot National Forest, grasses, maple, douglas fir, 580 m elevation; 10 July 1973.
81. Knuppenburg Lake, Forest Road 12, 3.2 km west of Summit, Gifford Pinchot National Forest, 1 250 m elevation, douglas fir, Alaska cedar, hemlock; 10 July 1973.
82. Indian Creek Camp, Forest Road 12, west end of Rimrock Lake, Snoqualamie National Forest, 915 m elevation; 10 July 1973.
83. Tolmie Peak above Eunice Lake, Mount Rainier National Park, 1 805 m elevation, alpine heather; 11 July 1973. No specimens collected.
84. Ann Lake between Mount Baker and Mount Shuksan, Mount Baker National Forest, 1 830 m elevation; 14 July 1973.

ANNOTATED LIST

In the following discussion, collecting sites are referred to by number, and the number of specimens collected is given in parentheses. Although no effort was made to collect aquatic specimens, a few individuals were secured from various localities, and those data are included for the records.

PELECYPODA

HETERODONTA

SPHAERIIDAE

Pisidium variabile Prime, 1865

A single specimen was collected at Station 78.

GASTROPODA

MESOGASTROPODA

PLEUROCERIDAE

Goniobasis silicula (Gould, 1847)

Looking Glass Creek, Winston, Oregon (23); 25 June 1964.

Goniobasis acutiflosa Stearns, 1890

Lake Almanor, Chester, California (53); 24 June 1964.

HYDROBIIDAE

Lithoglyphus nuttalliana (Lea, 1839)

Looking Glass Creek, Winston, Oregon (4); 25 June 1964.

BASOMMATOPHORA

PLANORBIDAE

Helisoma subcrenatum (Cooper, 1870)

Station 78 (4).

Menetus cooperi F. C. Baker, 1945

74 (3), 78 (1).

PHYSIDAE

Physa lordi Baird, 1863

78 (3).

CARYCHIDAE

Carychium occidentale Pilsbry, 1891

Live specimens were collected at stations 26 (4) and 33 (2) by sifting forest-floor litter.

STYLOMMATOPHORA

HELMINTHOGLYPTIDAE

Monadenia fidelis (Gray, 1834)

Live specimens were taken at 5 (6), 33 (2), and 74 (2). This species is much more common along the coasts of the Olympic Peninsula and southward in Oregon. The specimens from Station 74 have the base entirely dark with a single revolving light band at the periphery.

CAMAENIDAE

Megomphix hemphilli (W. G. Binney, 1879)

This species apparently has a distribution pattern which tends to avoid coastal areas in Washington. It is nowhere very abundant. The following specimens were collected: 29 (4), 32 (2), 37 (2).

OREOHELICIDAE

Oreohelix strigosa (Gould, 1846)

This species has a markedly discontinuous range in Washington (PILSBRY, 1939), being restricted mostly to the dry side of the mountains where it lives mostly under talus. PILSBRY (1903, 1939) thought the westernmost limits of the range was around Grand Coulee. However, the specimens reported here from stations 20 (8) and 51 (2) both lie well into Wenatchee National Forest, approximately 128 km west of the Grand Coulee site.

Oreohelix junii Pilsbry, 1939

The 11 specimens secured from beneath large boulders at the foot of pine trees at Station 19 are all strongly depressed and openly umbilicate and come from a locality which is intermediate in geographic position between PILSBRY's (1930) localities at Blue Lake and Grand Coulee. Representative measurements (averages below each) are:

Height	Diameter	Diameter Umbilicus	Whorls
11.5 mm	23.0 mm	6.6 mm	5.33
10.8	22.5	6.0	4.80
10.4	22.5	5.5	5.0
9.5	22.0	5.5	4.75
10.2	21.0	5.0	4.50

POLYGYRIDAE

The basic taxonomy in this family follows that of PILSBRY (1940).

Triodopsis germana (Gould, 1851)

Although widely distributed throughout the western slopes of the Cascades, *T. germana* does not appear to be abundant inland from the coastal lowlands. The following specimens were secured: 4 (8), 5 (6), 26 (2), 67 (2), 78 (2).

Triodopsis devia (Gould, 1846)

There are few records for this species from Washington, most of them coming from the lowlands around Puget Sound (PILSBRY, 1940). The five specimens reported here were secured from Station 20.

Allogona townsendiana (Lea, 1838)

As indicated elsewhere (BRANSON, 1977), *A. townsendiana* is more or less restricted to the moist western portions of Washington, hence it was surprising to find the 8 living specimens at Station 5. At the time, this park was newly opened and disturbance had been held to a minimum.

Vespericola columbiana (Lea, 1838)

This is the most widespread and abundant polygyrid snail in the state of Washington, particularly in lowland situations. The following specimens are reported: 4 (8), 5 (6), 6 (4), 8 (2), 23 (2), 25 (4), 27 (2), 33 (2), 34 (6), 35 (4), 37 (2), 49 (2), 56 (2), 59 (4), 6 (2), 62 (4), 65 (10), 67 (4), 68 (6), 74 (8), 75 (2), 84 (6).

HAPLOTREMATIDAE

Haplotrema vancouverensis (Lea, 1839)

Widely distributed from northern California to Alaska, this species penetrates farther inland and to higher elevations than I previously believed, although it is most abundant in the lowlands and coastal areas west of the mountains. At Mount Baker, the species is not uncommon near timberline (1372 m) and at Mount Rainier living specimens were collected at 1525 m elevation. Specimens taken from the higher elevations tend to be more olive-green and lighter behind the aperture than ones living in lowland situations. The following specimens are reported: 4 (14), 6 (10), 9 (4), 26 (8), 30 (2), 33 (6), 34 (14), 35 (4), 37 (6), 43 (2), 51 (2), 58 (6), 59 (2), 67 (4), 68 (4), 72 (6), 74 (2), 81 (2).

Haplotrema sportella (Gould, 1846)

This species, coarse-sculptured and variable, also has a relatively wide distribution in the Cascades and adjacent areas. Our collections include the following data: 5 (18),

8 (2), 9 (12), 10 (8), 63 (2), 65 (10), 66 (8), 67 (4), 37 (2), 40 (4), 59 (2), 24 (4), 26 (14), 27 (4), 33 (6), 68 (6), 72 (2), 74 (16), 76 (2), 78 (2), 80 (4), 84 (4).

ZONITIDAE

Euconulus fulvus (Müller, 1774)

Distributional records for this species are rather scanty in Washington, doubtless because of inadequate collecting. The following specimens were collected: 9 (2), 12 (2), 13 (2), 14 (2), 18 (2), 19 (6), 27 (2), 31 (2), 59 (2), 60 (2), 80 (2).

Retinella electrina (Gould, 1841)

Apparently quite uncommon in the Pacific Northwest. A total of three specimens, one each from stations 8, 45, and 75, were collected, all from beneath large rocks.

Retinella binneyana occidentalis H. B. Baker, 1930

Likewise, not an exceptionally common species. All specimens reported here exhibit a fine spiral sculpturing under magnification: 18 (4), 33 (2), 56 (2), 76 (2).

Pristiloma stearnsi (Bland, 1875)

A single specimen was secured at Station 9 from leaf litter. The species was also rarely encountered on the Olympic Peninsula (BRANSON, 1977).

Pristiloma arcticum (Lehnert, 1884)

Although I previously reported this species from the Olympic Peninsula (BRANSON, 1977) and mounts Baker and Adams, near timberline, during this investigation specimens were collected at Mount Rainier National Park: 60 (2), 62 (4), 68 (6).

Pristiloma lansingi (Bland, 1875)

Probably the most abundant *Pristiloma* on the Olympic Peninsula (BRANSON, 1977), *P. lansingi* shares its abundance with the next species in the Cascades. Specimens were collected from the following localities: 67 (2), 68 (2), 74 (2), 76 (2), all from leaf litter.

Pristiloma johnsoni (Dall, 1895)

This species ranges farther downslope towards the lowlands than most other *Pristiloma*. For example, the specimens from station 33 were found near sea level. Collections: 26 (4), 27 (6), 31 (2), 33 (2), 65 (4).

Pristiloma wascoense (Hemphill, 1911)

This transparent species was previously known in Washington only from a site 1540 m high on the Olympic Peninsula (BRANSON, 1977). The collections reported here are all from Mount Rainier: 54 (2), 58 (6). Both sites are above 1500 m in elevation.

Zonitoides arboreus (Say, 1816)

Although occurring on both the dry and wet sides of the mountains, as documented by our collections, *Z. arboreus* is much more common in the dry zones of eastern Washington than in the west. Collections: 9 (2), 12 (10), 15 (10), 17 (4), 19 (2), 20 (5), 22 (2), 50 (5).

Striatura pugetensis (Dall, 1895)

Typical specimens were collected from the following sites: 26 (2), 27 (4), 31 (4), 33 (2), 45 (2), 56 (2), 62 (2), 65 (4), 66 (8), 74 (2), 75 (2), 76 (2), 80 (4).

Vitrina alaskana Dall, 1905

Found both at high elevations, as at stations 54 and 57, this fragile species was also found at lower elevations on the eastern slopes of the mountains. The habitat conditions at Station 19, from which the largest collection was taken, are extremely arid. Collections: 12 (6), 14 (4), 15 (8), 18 (6), 19 (20), 20 (2), 54 (2), 57 (10).

ENDODONTIDAE

Discus cronkhitei (Newcomb, 1865)

There are few records for this species in Washington (PILSBRY, 1946; BRANSON, 1977), and the single specimen from Station does not increase the knowledge much.

Punctum randolphi (Dall, 1895)

Ranging from near sea level to nearly timberline, *P. randolphi* is widespread on the western slopes of the Cascades, where it is nearly as common as the next species. Collections: 33 (2), 66 (8), 67 (2), 68 (2), 75 (2), 76 (12).

Punctum conspectum (Bland, 1865)

Collections: 15 (2), 27 (2), 31 (2), 56 (2), 57 (2), 58 (18).

PUPILLIDAE

Pupilla hebes (Ancey, 1881)

This is the only common pupillid at and above timberline in the Cascades, although our collections only include four specimens from Station 68, all living.

Vertigo columbiana Sterki, 1892

Collections: 68 (3).

Vertigo modesta (Say, 1824)

Collections: 60 (2).

VALLONIIDAE

Planogyra clappi (Pilsbry, 1898)

Collections: 33 (4), 76 (2).

THE SLUGS

The state of Washington truly has a mammoth slug problem, principally because of *Arion ater* (BRANSON, 1977; HANNA, 1966). The moist, heavily vegetated coastal areas are perfect habitats for slugs, some areas producing as many as 50 individuals per square meter, particularly in the coastal strawberry fields. In these situations, exotic species far outnumber the native ones.

LIMACIDAE

Deroceras reticulatum (Müller, 1774)

Commonly found around human habitations in Washington (BRANSON, 1977)

Collections: 5 (2).

Deroceras laeve (Müller, 1774)

Collections: 7 (2), 33 (4).

Limax maximus Linnaeus, 1758

This large exotic slug has a spotty distribution in Washington, mostly around human habitations and disturbed areas. Collections: 8 (2), 26 (2), 33 (3), 47 (2).

ARIONIDAE

Some of the more important references to the destructive members of this family are PILSBRY (1948), QUICK (1949), BURCH (1960), HANNA (1966), CHICHESTER & GETZ (1969), ROLLO & WELLINGTON (1975).

Arion ater (Linnaeus, 1758)

In coastal humid Washington, *A. ater* is the most common slug encountered, far outnumbering native slugs, and at some sites in Mount Baker National Forest (Station 28, for example) the species is approximately twice as abundant as the native banana slug, the black variety being three times as common as the orange or red. The following specimens were retained for the records but do not indicate relative abundance: 5 (6), 8 (1), 26 (4), 28 (4), 30 (1), 32 (2), 33 (6), 39 (1), 40 (1), 47 (1)—a huge population in this park, over 200 specimens being counted at one garbage can—70 (1)—50 per square meter counted at the margin of this strawberry field.

Prophysaon andersoni (J. G. Cooper, 1872)

Collections: 20 (2).

Prophysaon foliolatum (Gould, 1851)

Although quite common along the periphery of the Olympic Peninsula, only one specimen was taken from the

mainland (Station 72). The type locality for the species lies near Fort Townsend on the Peninsula (PILSBRY, 1948).

Prophysaon vanatta Pilsbry, 1948

The most widespread and abundant *Prophysaon* in mainland Washington and adjacent Canada. Collections: 2 (2), 9 (6), 19 (8), 26 (2), 37 (2), 47 (4), 50 (4), 59 (2), 60 (2), 69 (2), 71 (2), 79 (4).

Ariolimax columbianus (Gould, 1851)

Collections: 5 (6), 9 (4), 23 (2), 26 (2), 28 (4), 30 (4), 33 (2), 45 (2), 47 (4), 59 (4), 62 (1), 72 (2), 74 (2).

Hemphillia dromedarius Branson, 1972

Collections: 6 (1), 37 (1), 48 (1), 49 (1), 59 (2).

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